Organizing the Animal Hierarchy into a Linnean Taxonomy in SNOMED CT®

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ABSTRACT

SNOMED Clinical Terms® (SNOMED CT®) was created from a merger of SNOMED Reference Terminology® (SNOMED RT®)and CTV3 the Read Codes. The animal hierarchy in SNOMED RT was organized by common names, such as "Dog" and "Cat". It was later decided to convert common names to Linnean Taxonomy in SNOMED CT, such as Canis familiaris and Felis Sylvestris ,in accordance with the Integrated Taxonomic Information System (ITIS) and the Smithsonian mammalian taxonomy.

INTRODUCTION

SNOMED CT's living organism taxonomy is being revised into a systematic and consistent Linnean hierarchy. Presently, it consists of Linnean taxonomic terms (*Canis familiaris*), common names for organisms *Dog*, and non-taxonomic information such as use and circumstances (Laboratory fur-bearing animal), pathogenicity (parasite), and life cycle stage of organisms (worm eggs). All existing taxonomic terms are being reviewed and standardized according to ITIS, and using the Smithsonian mammalian taxonomy website as a secondary reference. Presently, work is being done to represent families, subfamilies and order levels. In the future, species and genera will be added as time allows and as requested by users.

METHODS

New concepts representing the scientific names have been created. All organisms that are represented by their common names have been retired and made synonyms to their appropriate scientific names. In addition, the retired concept name will be linked to its scientific name where appropriate. For example, the common name *Dog* has been retired because it may mean the species name of *Canis familiaris* or the *Family Canidae*. In addition, two new concepts have been created *Canis familiaris* and *Family Canidae*, with the common name *Dog* as a synonym for both. Of note, the names *Canis lupus familiaris*, dingo and domestic dog ancestor have also been added as synonyms to the concept *Canis familiaris*. See schematic representation of the newly created concepts below:

      Canis familiaris (organism)
           Synonym Canis lupus familiaris
           Synonym Dingo
           Synonym Dog
           Synonym Domestic dog ancestor
      Family Canidae (organism)
           Synonym Dog

The Linnean taxonomy hierarchy for species *Canis familiaris* in SNOMED is shown below:
Canis familiaris
→IS-A Genus Canis
        →IS-A Family Canidae
               →IS-A Suborder Caniformia

DISCUSSION

Presently, SNOMED is focusing on extending and correcting SNOMED's coverage of birds and mammals. Over 800 new mammalian concepts have been created to represent families, subfamilies and genera. Further changes are being proposed to represent non-taxonomic contextual information about living organisms. Such changes will include contexts about domesticity (domestic, feral, wild), use (food, laboratory, breeding, etc.), life stages (oocyte, larva, spore, etc.), and medical significance (parasite, pathogen, etc.)

CONCLUSIONS

Reorganizing the animal hierarchy in SNOMED CT will improve its overall value to users. While common names in the past have been the basis of our taxonomy the new representation of Linnean terms will facilitate our universality and eliminate the chance that concept names are misunderstood.

REFERENCES

1. SNOMED Clinical Modelers Team Meeting. Trapping a Better Mouse: Taxonomy of Living Organisms in SNOMED. Laura Livesay BS, MA, DVM. 2003.